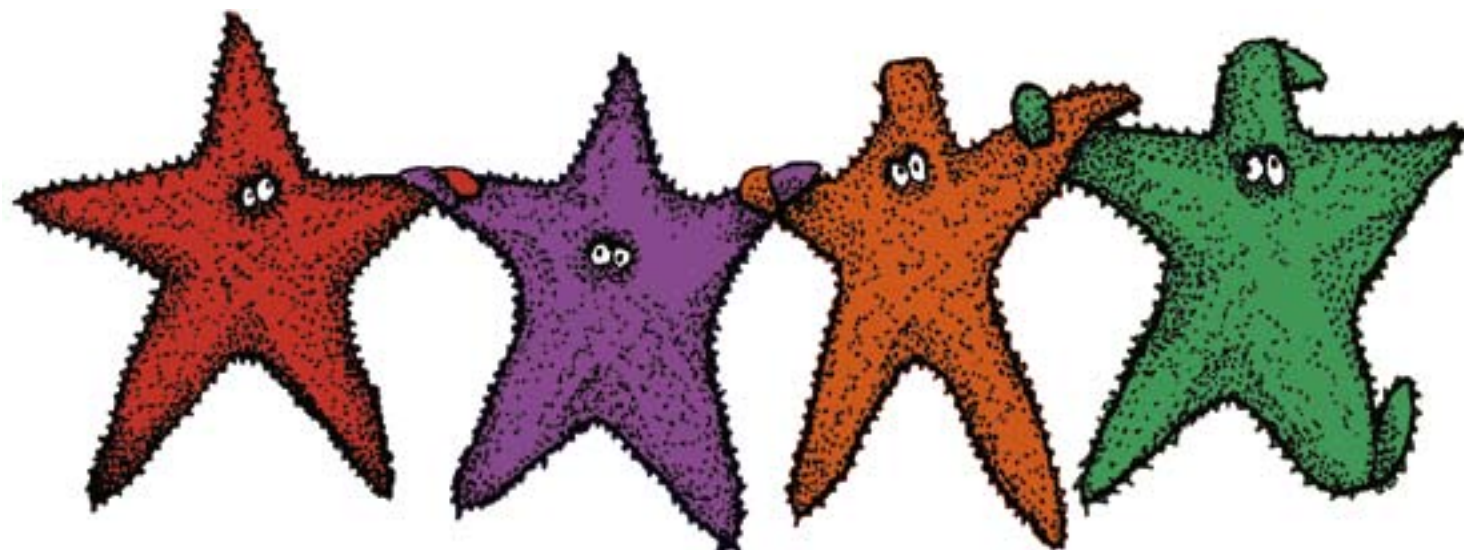
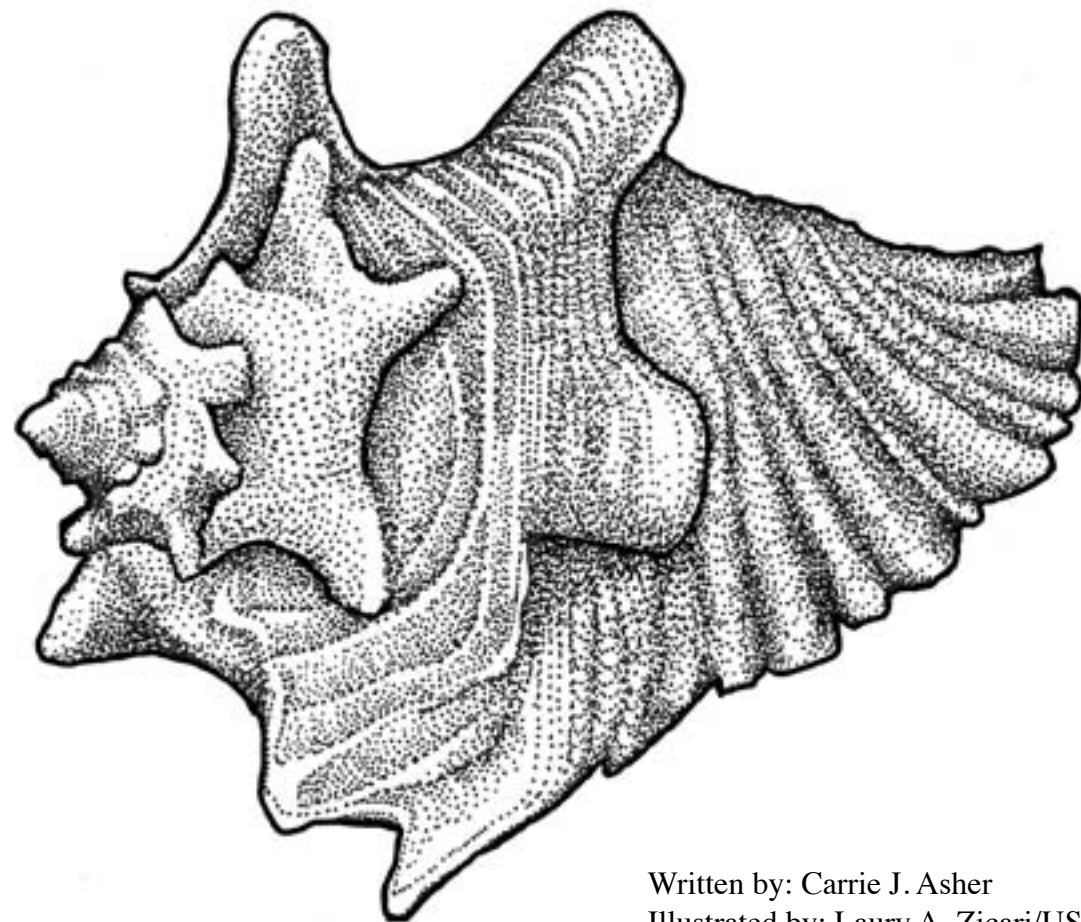


# Let's Celebrate Rachel Carson





Written by: Carrie J. Asher  
Illustrated by: Laury A. Zicari/USFWS

### About Rachel Carson

As a young child, Carson's consuming passions were her writing and exploring the forests and streams around her hillside home near the Allegheny River in Pennsylvania. She first published at the age of 10 in a children's magazine dedicated to the work of young writers. In 1925, determined to become a writer, she entered the Pennsylvania College for Women as an English major, but switched to biology midway through her studies.

Her first experience of the ocean came during a summer fellowship at the U.S. Marine Laboratory in Woods Hole, Massachusetts. After graduating from college, she won a scholarship to complete graduate work in biology at Johns Hopkins University in Maryland, an enormous accomplishment for a woman in 1929.



### The Beginning of a Legacy

Carson's distinction in writing and biology led to a job in 1936 with the U.S. Bureau of Fisheries (now the U.S. Fish and Wildlife Service). She created a series of 7-minute radio spots on marine life called *Romance Under the Waters*.

Meanwhile, she continued to publish her writings on conservation and nature in newspapers and magazines, urging people to regulate the "forces of destruction" and consider always the welfare of the "fish as well as that of the fisherman."

In her free time, Carson wrote books about her government research. She published her first book, *Under the Sea Wind*, in 1941. During her 15-year career with the Service, she wrote numerous pamphlets and bulletins on conservation—the most well-known was a series entitled, *Conservation in Action*—devoted to exploring wildlife and ecology on national wildlife refuges.

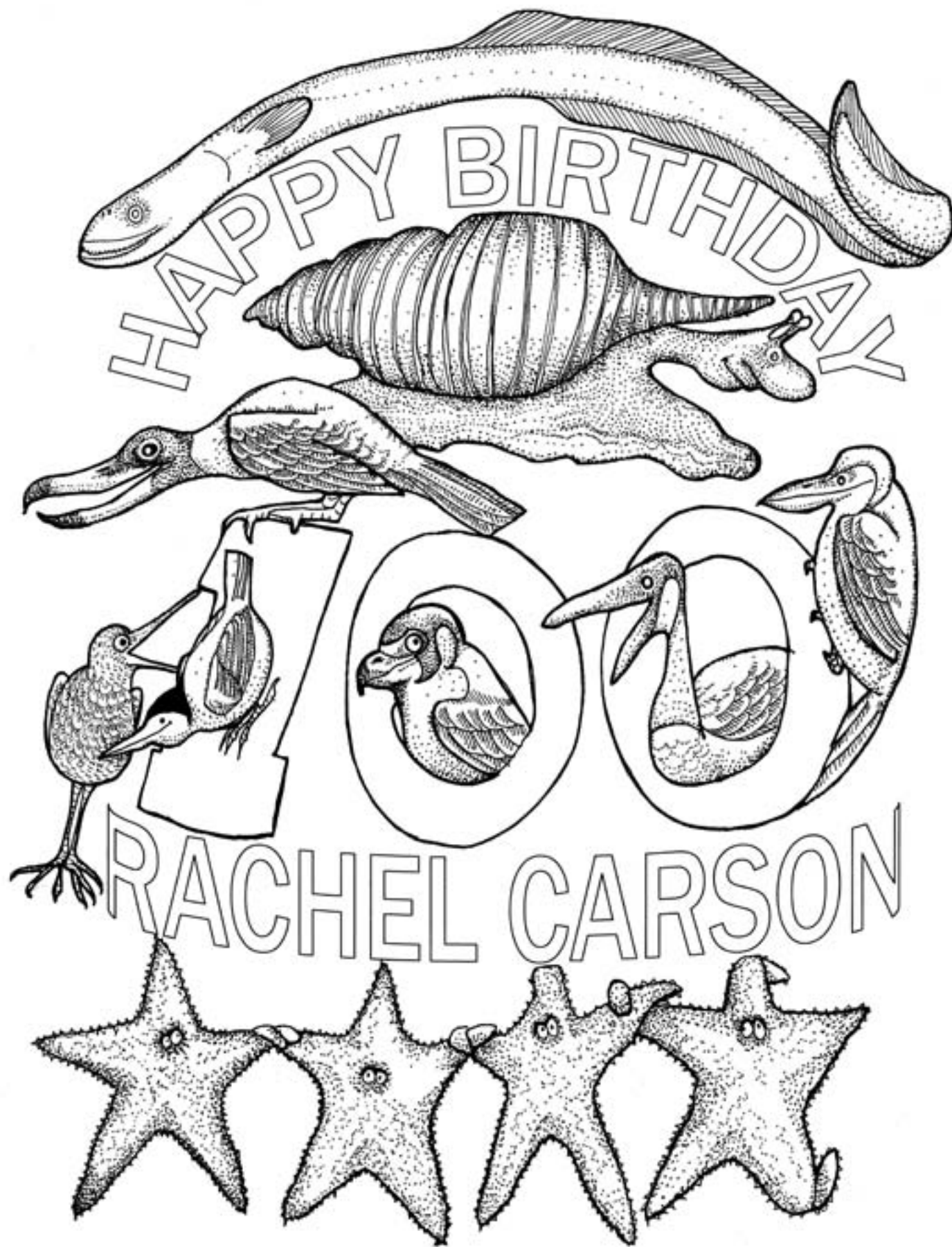
She published her second book, *The Sea Around Us*, in 1951. It stayed on the *New York Times* best-seller list for 81 weeks. After that success, she resigned her position with the Service in 1952 to devote all of her time to writing. *The Sea Around Us* and *The Edge of the Sea*, a third book published in 1956, gave concerned environmentalists a new perspective on conservation.

### An Environmental Revolution

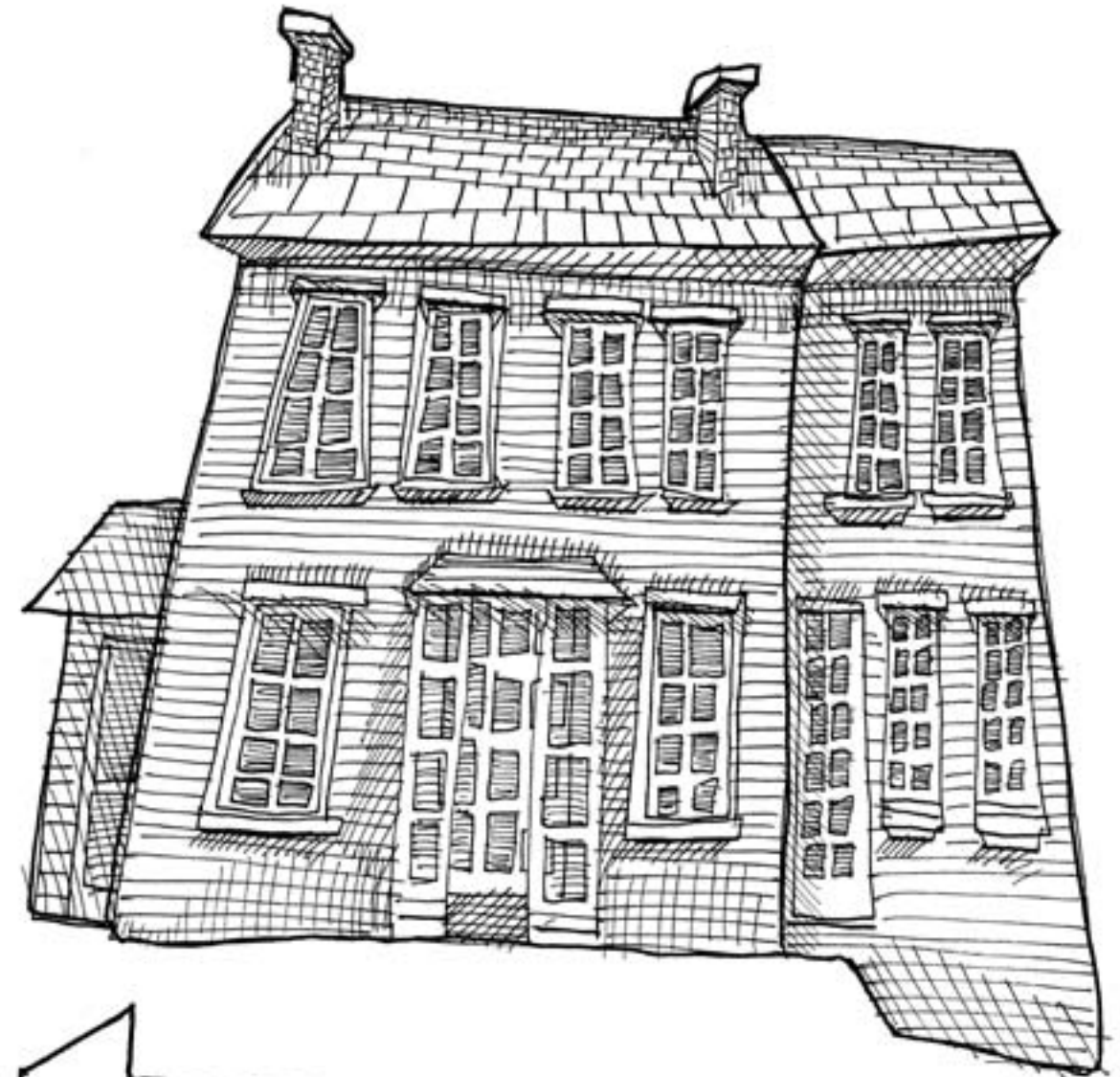
Her final book, *Silent Spring*, published in 1962, awakened society to an awareness of its responsibility for other forms of life. Carson had long been aware of the dangers of chemical pesticides, but also was aware of the controversy within the agricultural community, which depended on using pesticides to increase crop production.

*Silent Spring* provoked a fire storm of controversy and personal attacks on Carson's professional integrity. The pesticide industry mounted a massive campaign to discredit Carson, even though she did not urge the complete banning of pesticides, but instead called for research to ensure that pesticides were used safely and alternatives to dangerous chemicals such as DDT were found. Carson was asked to testify before a congressional committee, and the federal government ordered a complete review of pesticide policy. As a direct result of that review, DDT was banned. By publishing *Silent Spring*, Carson has been credited with launching the contemporary environmental movement and awakening Americans' concern about the environment.





1907 - 2007

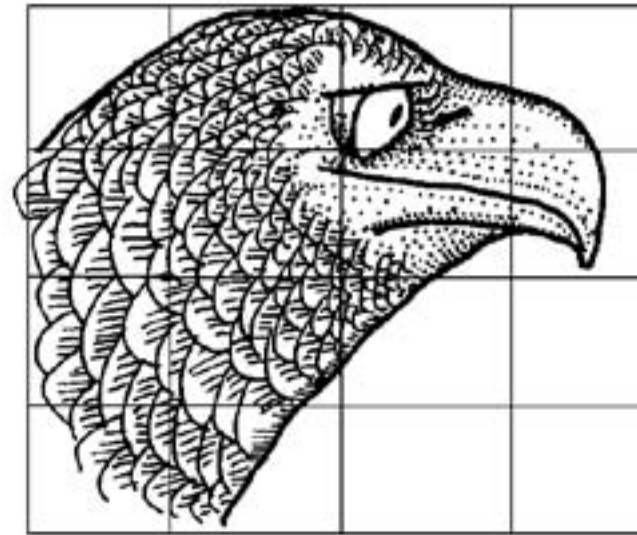


Rachel Carson was born May 27, 1907, in Springdale, Pennsylvania. She went to high school and college in Pennsylvania, and studied more in Massachusetts.

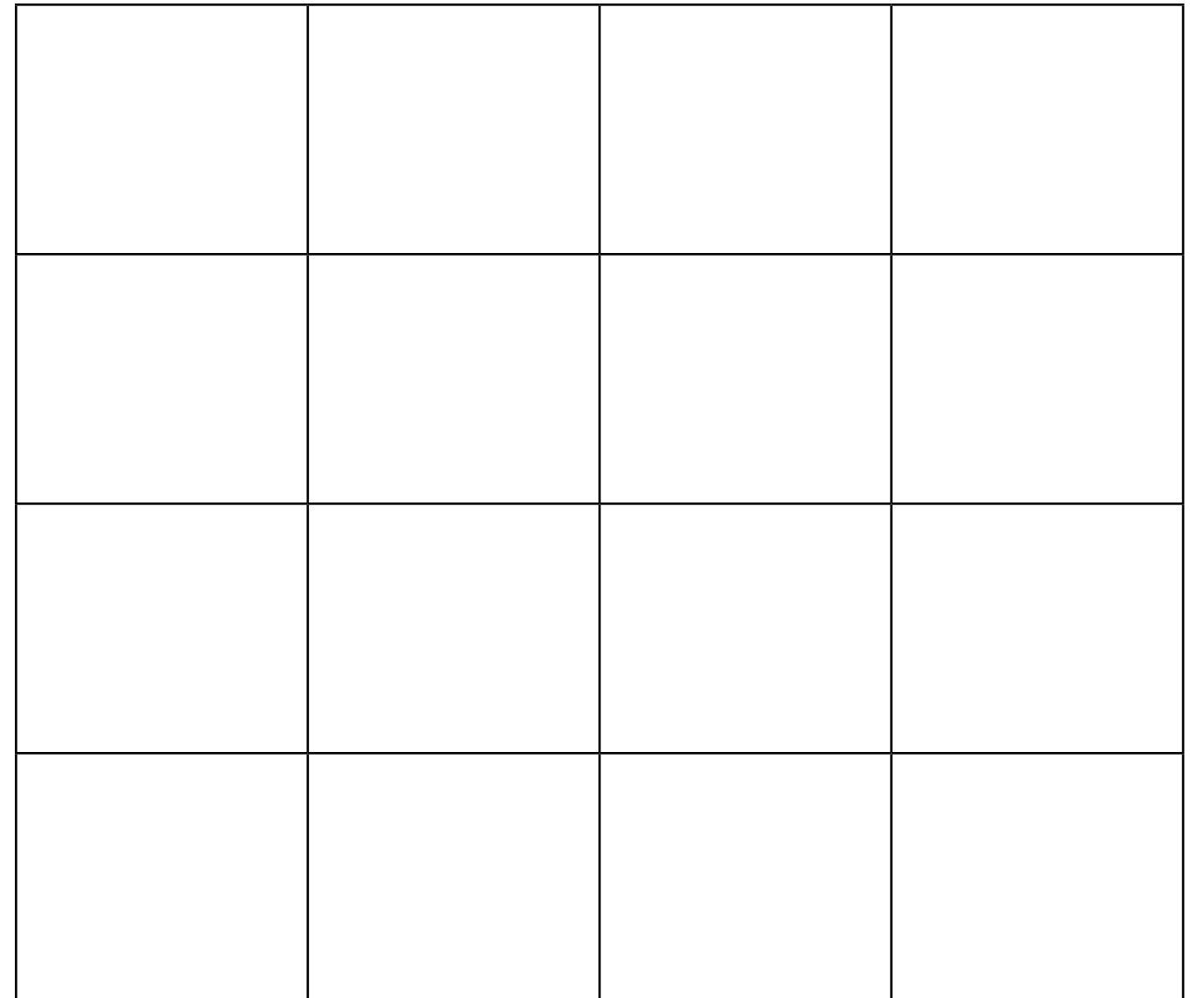


As a child, she loved to read, especially books by Beatrix Potter and any books about the sea, which she didn't even see until she was grown up.

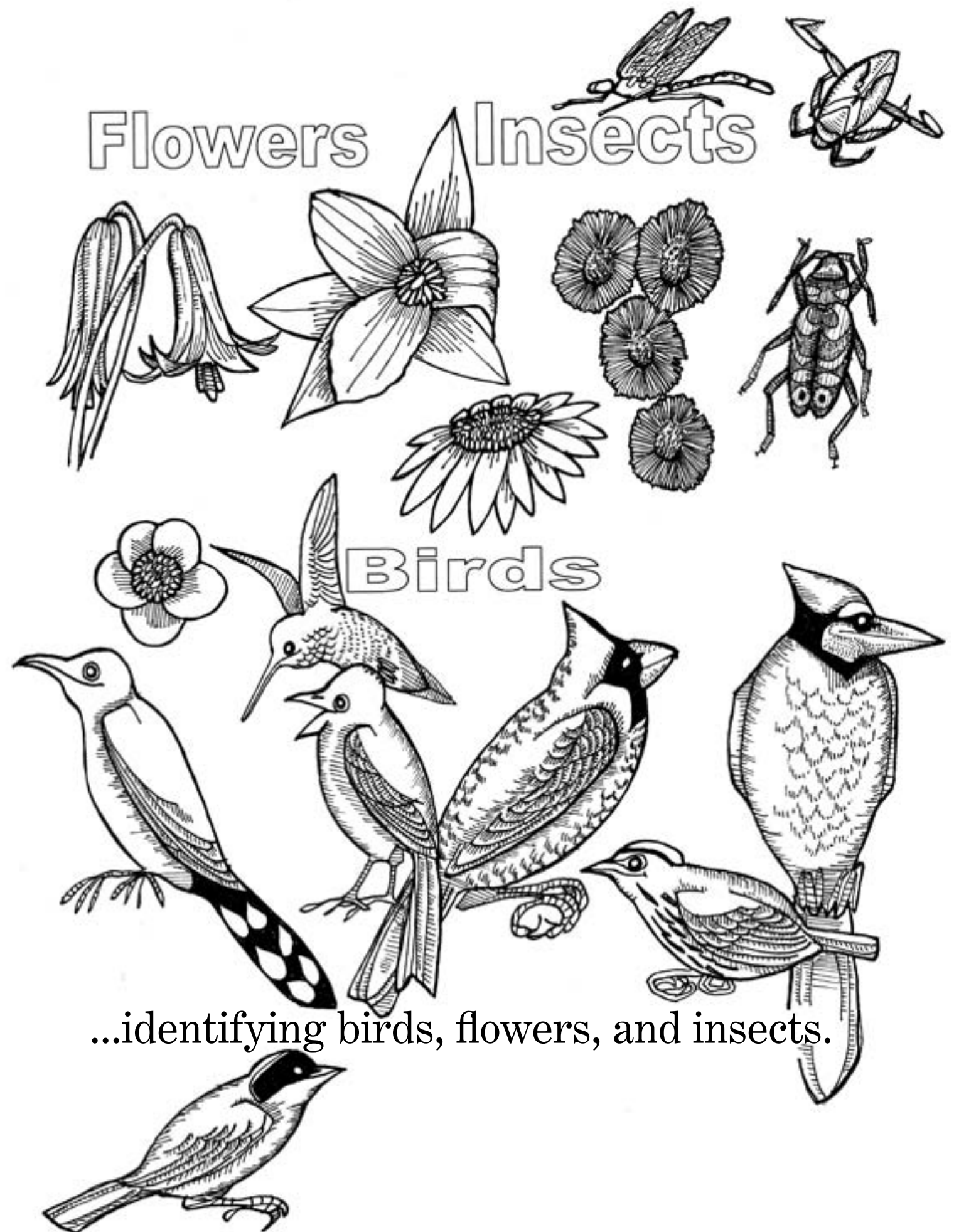
## YOU CAN DRAW!



Use the grid to draw the Bald Eagle.



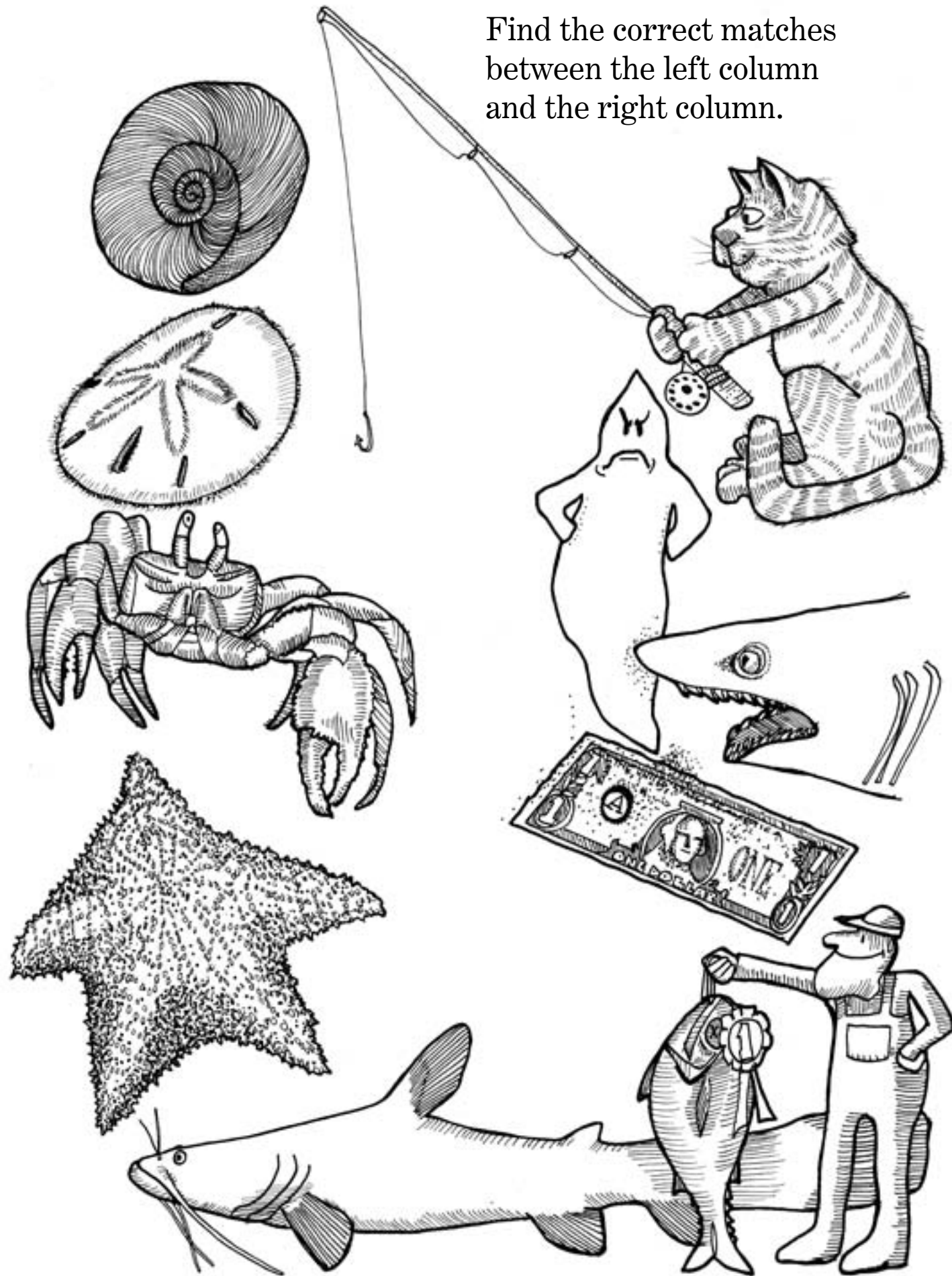
Rachel also loved to explore the woods behind her house with her mother...



...identifying birds, flowers, and insects.



Find the correct matches  
between the left column  
and the right column.



Answers: shark's eye small and eye of shark; sand dollar and sandy dollar;  
ghost crab and crabby ghost; starfish and star fisherman; catfish and fishing cat.



As a result, Rachel developed a sense  
of wonder and appreciation for all  
plants and animals. This provided a  
foundation for her life's work.



When she grew up, Rachel Carson worked as a writer and a biologist for the United States Fish and Wildlife Service for 15 years!

10

*How many words can you make from the letters in:*

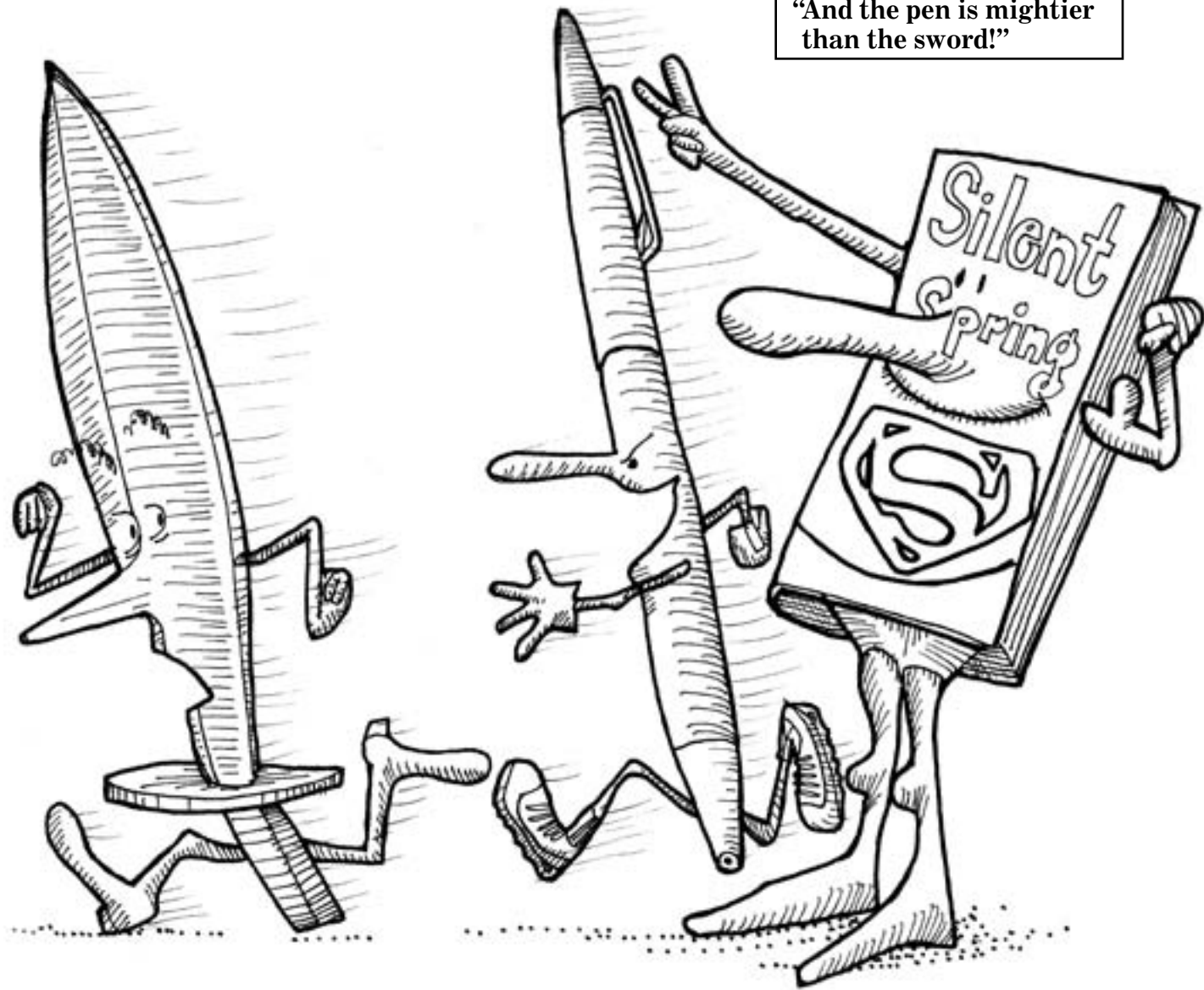
**UNITED STATES  
FISH AND WILDLIFE SERVICE  
DEPARTMENT OF THE INTERIOR**



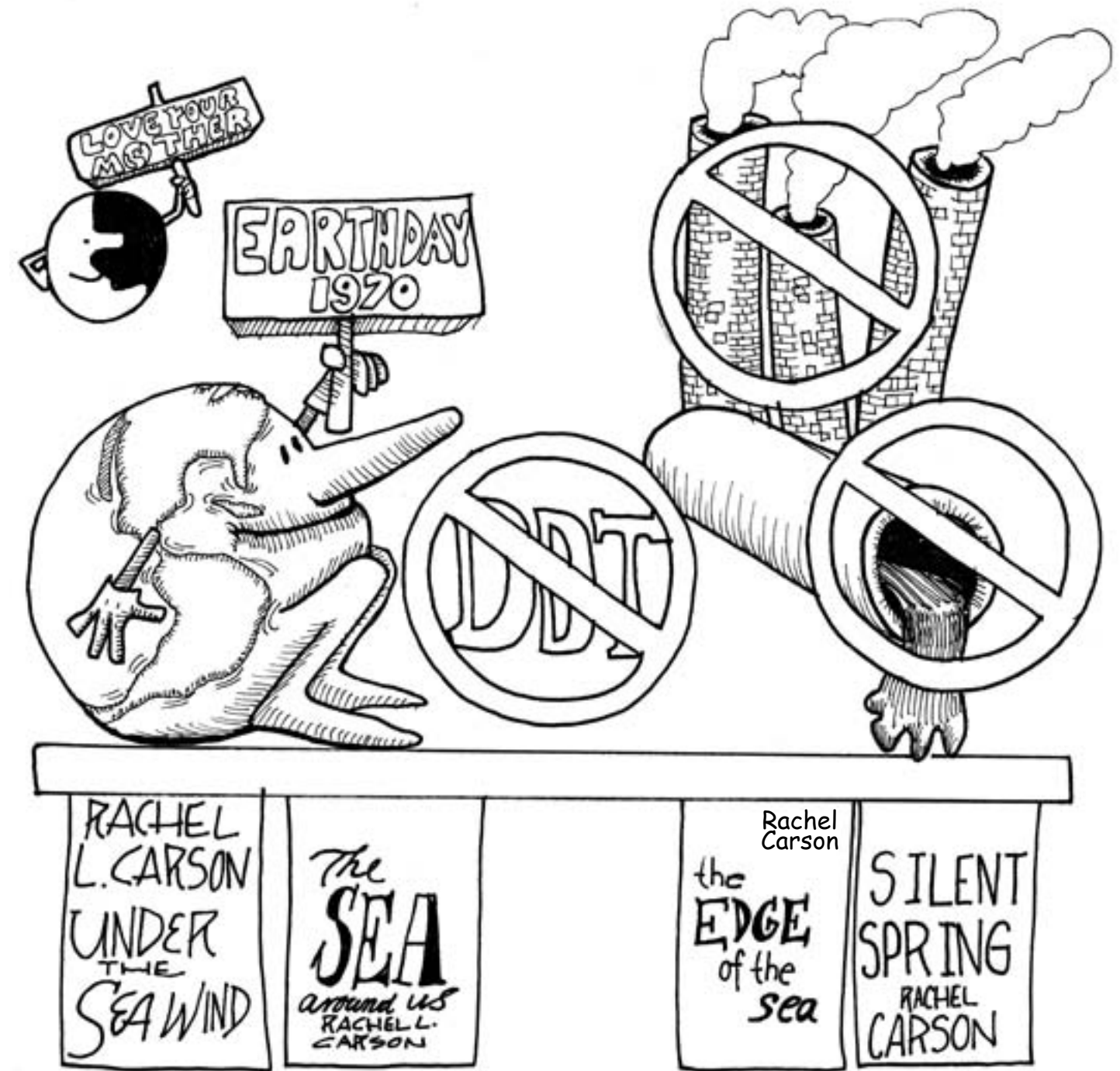
leaf

wren

"And the pen is mightier  
than the sword!"



During her life, Rachel Carson wrote many articles and books which illustrate her poetic and powerful writing style, passion for writing, and genuine concern about the earth.



Four of her books are still well-known today and were a big part of the foundation for the environmental movement in the 1960s.

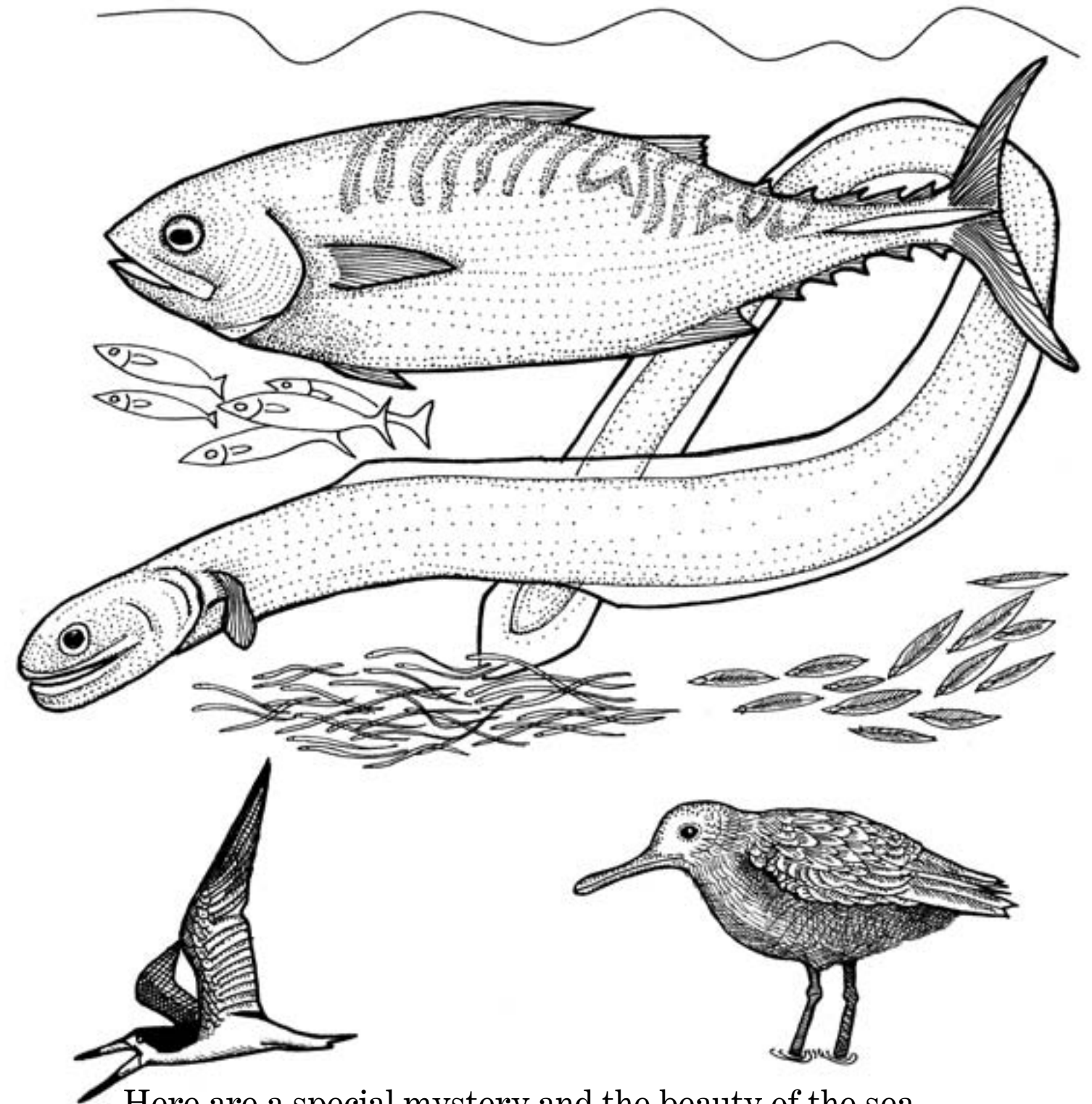




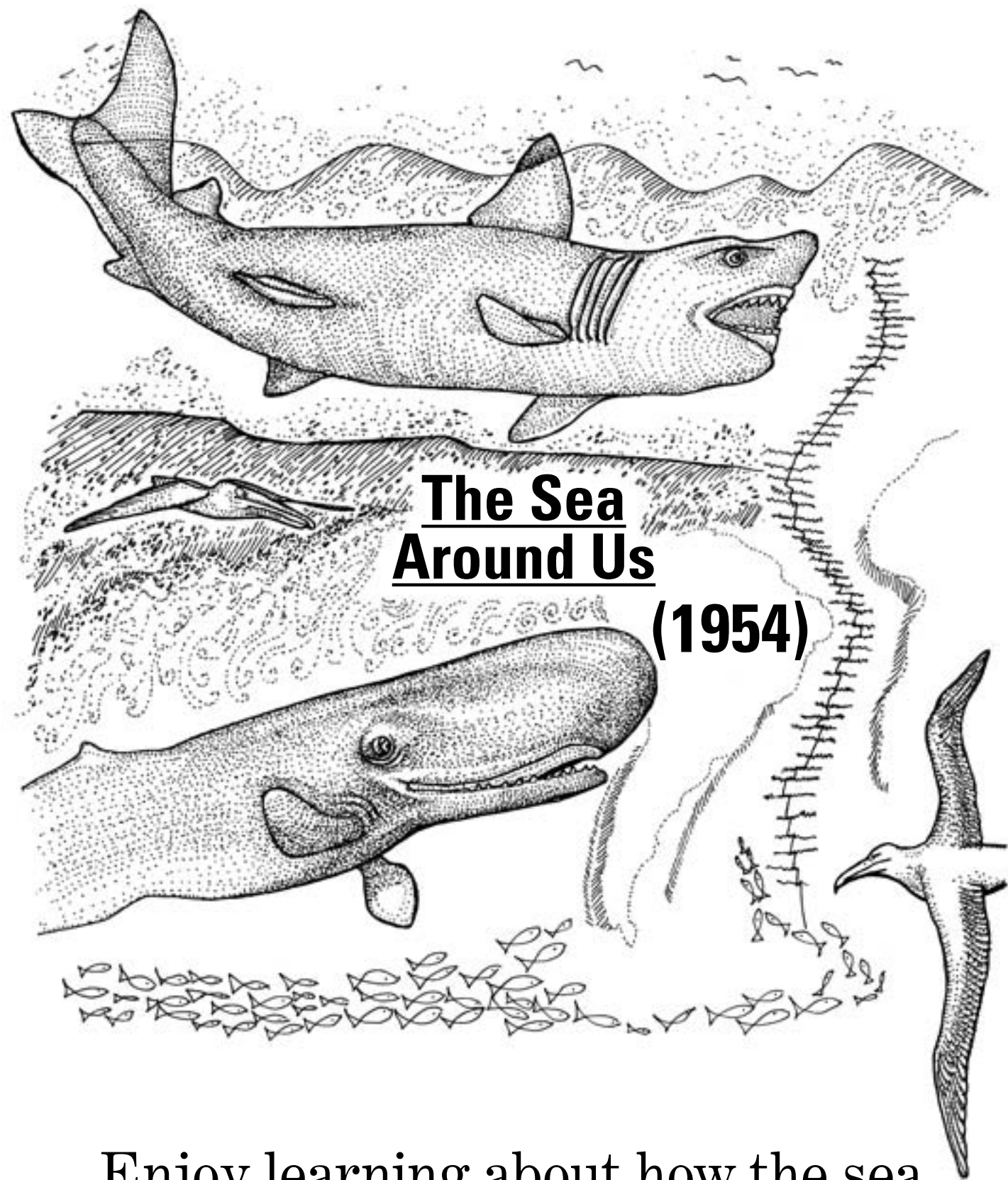
**Help Rachel find  
her Typewriter!**



## Under the Sea Wind (1941)



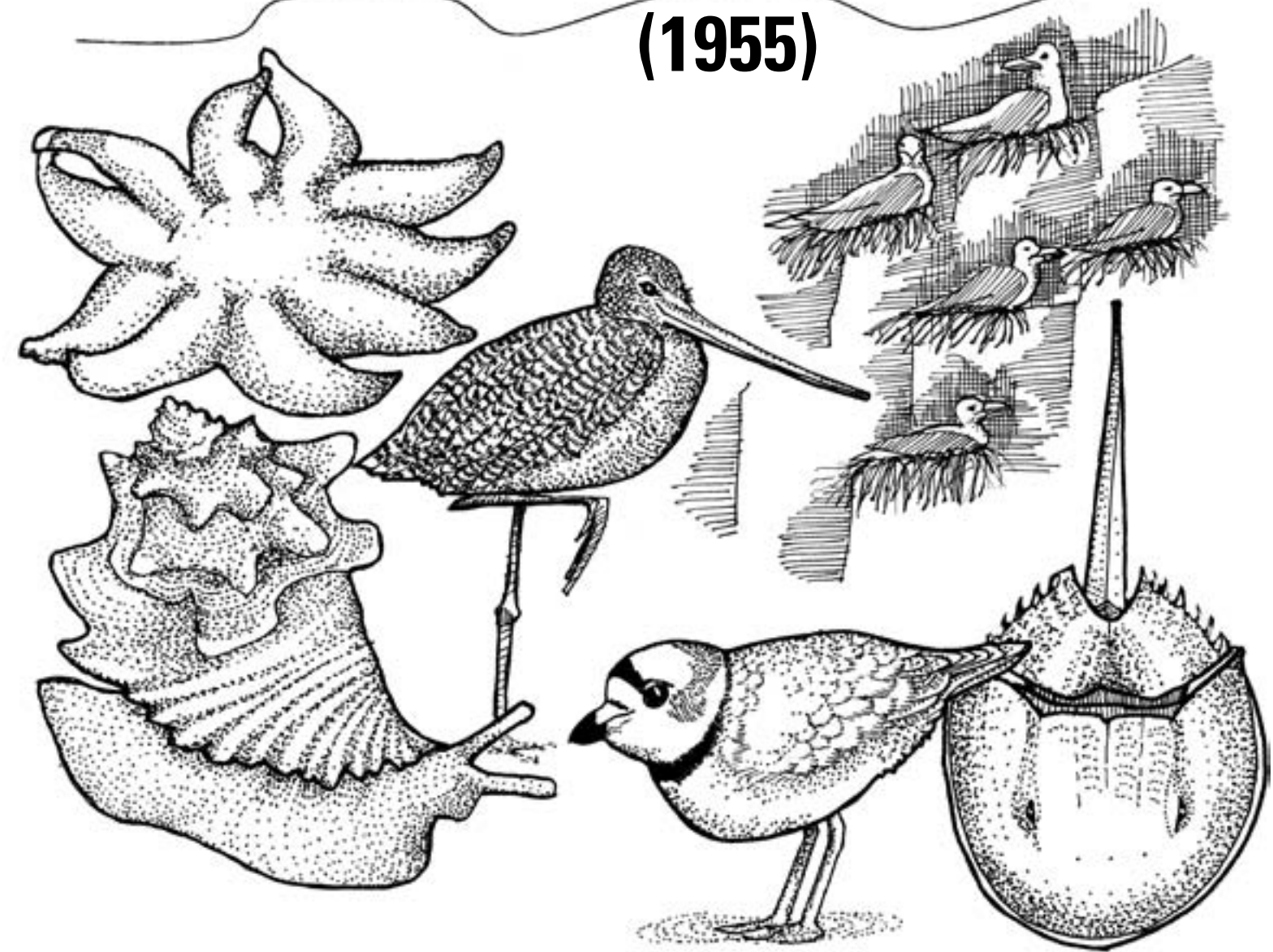
Here are a special mystery and the beauty of the sea,  
following the lives of Blackfoot the sanderling sandpiper,  
Rynchops the black skimmer, Scomber the mackerel and  
Anguilla the eel.



**The Sea  
Around Us**  
(1954)

Enjoy learning about how the sea formed, what it looks like, and the creatures that inhabit it.

***The Edge of the Sea***  
(1955)



Rachel Carson unfolds to us a world that is entirely different from that of the deep sea. Join Rachel as she takes you on a tour of creatures that inhabit The Edge of the Sea.



**Silent Spring (1962)** illustrates the environmental and human dangers of the careless use of pesticides, which gave rise to changes in the laws affecting our water, land, and air.



## 50 things YOU can do to become a Conservationist

### **REDUCE, REUSE, RECYCLE, AND RESPONSIBLY DISPOSE OF THINGS THAT CAN'T BE RECYCLED TIPS TO SHARE WITH MOM OR DAD**

1. Don't litter.
2. Dispose of things that contain toxic materials in a responsible way.
3. Many common household products contain harmful, even toxic materials – including batteries, some light bulbs, paint, some detergents, computer monitors and other PC parts, wood preservatives, antifreeze, house plant care products, perfume.
4. Take care in disposing of medical waste.
5. Dispose of disposable diapers responsibly.
6. Recycle laser and ink jet printer cartridges.
7. Staple scrap paper together to make writing pads.
8. Recycle paper, cardboard, glass, plastics, soda bottles and cans, and tin cans.
9. Don't throw biodegradable matter in the trash - compost!
10. Use e-mail, not paper.
11. Don't print out your e-mail messages.
12. Circulate and post copies of things, or post PDF versions rather than printing out multiple copies.
13. Turn off lights and appliances when not in use.
14. Buy and use energy-saver appliances. Buy energy-saver light bulbs.
15. Make two-sided copies of things.
16. Ride your bike to run errands.
17. Car pool! Be a VIP in the HOV lane!
18. Walk, don't drive.
19. Buy local produce.
20. Eat food from as low as possible on the food chain.
21. Avoid over-packaged products.
22. Use ceramic coffee mugs instead of disposable cups.

*(Continued on page 22)*







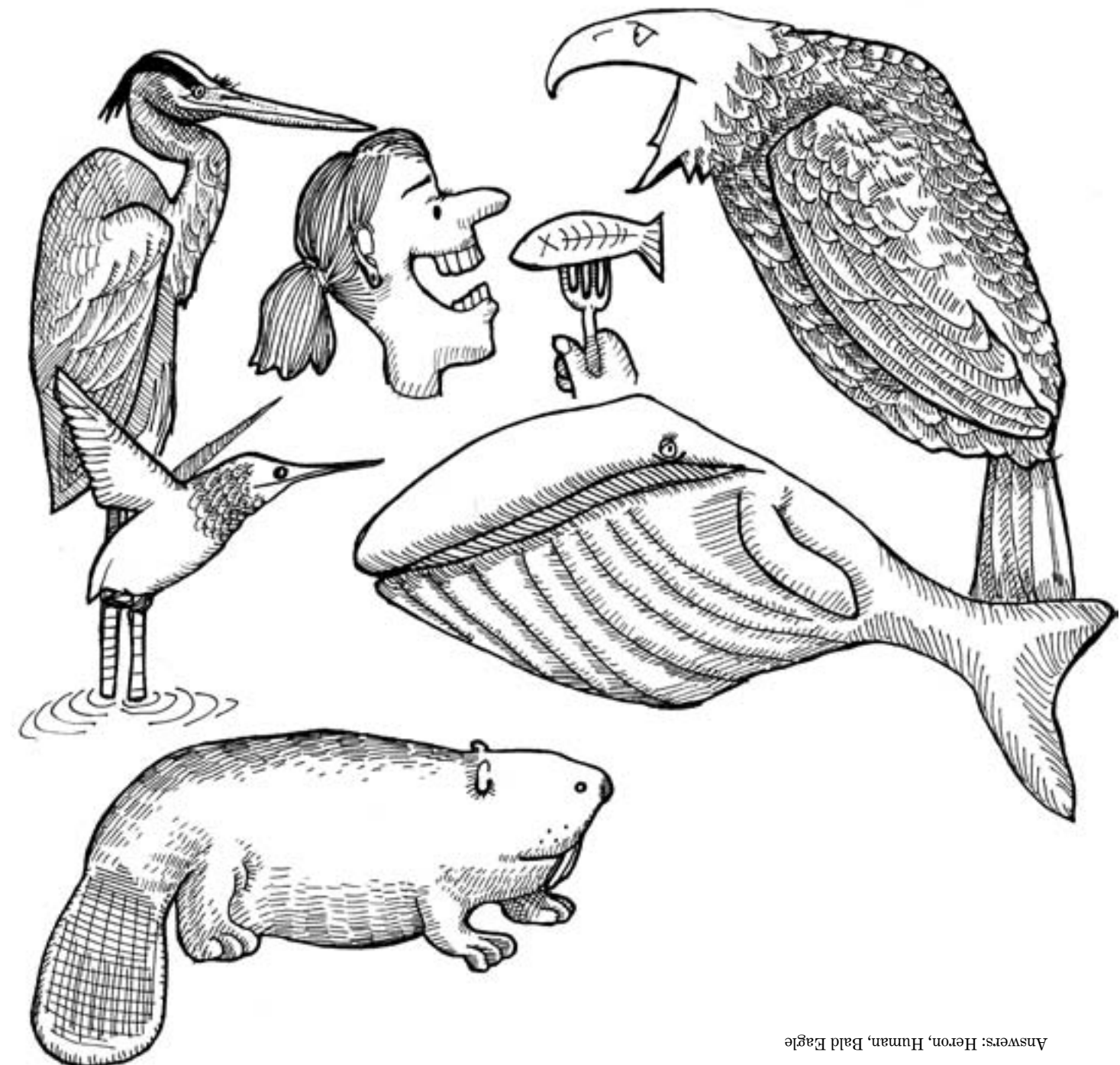
(Continued from page 19)

**REDUCE, REUSE, RECYCLE,  
AND RESPONSIBLY DISPOSE OF THINGS THAT CAN'T BE RECYCLED  
TIPS TO SHARE WITH MOM OR DAD**

23. Use regular silverware, and not plastic forks, knives and spoons.
24. Bring your own reusable travel mugs.
25. Tighten faucets and conserve water.
26. Take short showers, not long baths.
27. Water your lawn in the early morning when it is cooler.
28. Turn down your heat to conserve fossil fuels and reduce global warming.
29. Commute in energy-efficient vehicles to reduce global warming.
30. Commute by bicycle.
31. Commute by public transportation.
32. Wash clothes in cold water, not HOT.
33. Use steel shot, not lead shot.
34. When affordable, buy organics.
35. Buy earth-friendly alternatives to drive pests away.
36. Use earth-friendly materials for fertilizers.
37. Buy a catalytic converter for your new wood stove.
38. Use environmentally-friendly laundry detergents.
39. Think about what should go down the drain – it might pollute a river or lake!
40. Garbage disposals only grind up food so that the treatment plant THEN has to remove it.
41. If you live next to a stream or lake, don't plant lawn next to the water; leave natural vegetation.
42. Encourage your community to minimize use of herbicides along the shoulders of roads.
43. Use old-fashioned mouse traps, not poison.
44. Use mosquito head nets, not insect repellent slathered all over your face.
45. **READ PRODUCT LABELS!**
46. **MINIMIZE WILDLIFE HABITAT LOSS.** Plant a tree and native wildflowers.
47. Mulch, but not cypress or cedar chips...
48. Compost. Use aged leaf mulch, not peat moss from irreplaceable bogs to amend your garden soil.
49. Visit/volunteer at local county/state national parks.
50. Let trees and bushes grow next to water; they provide shade for the fish and keep the water cool.

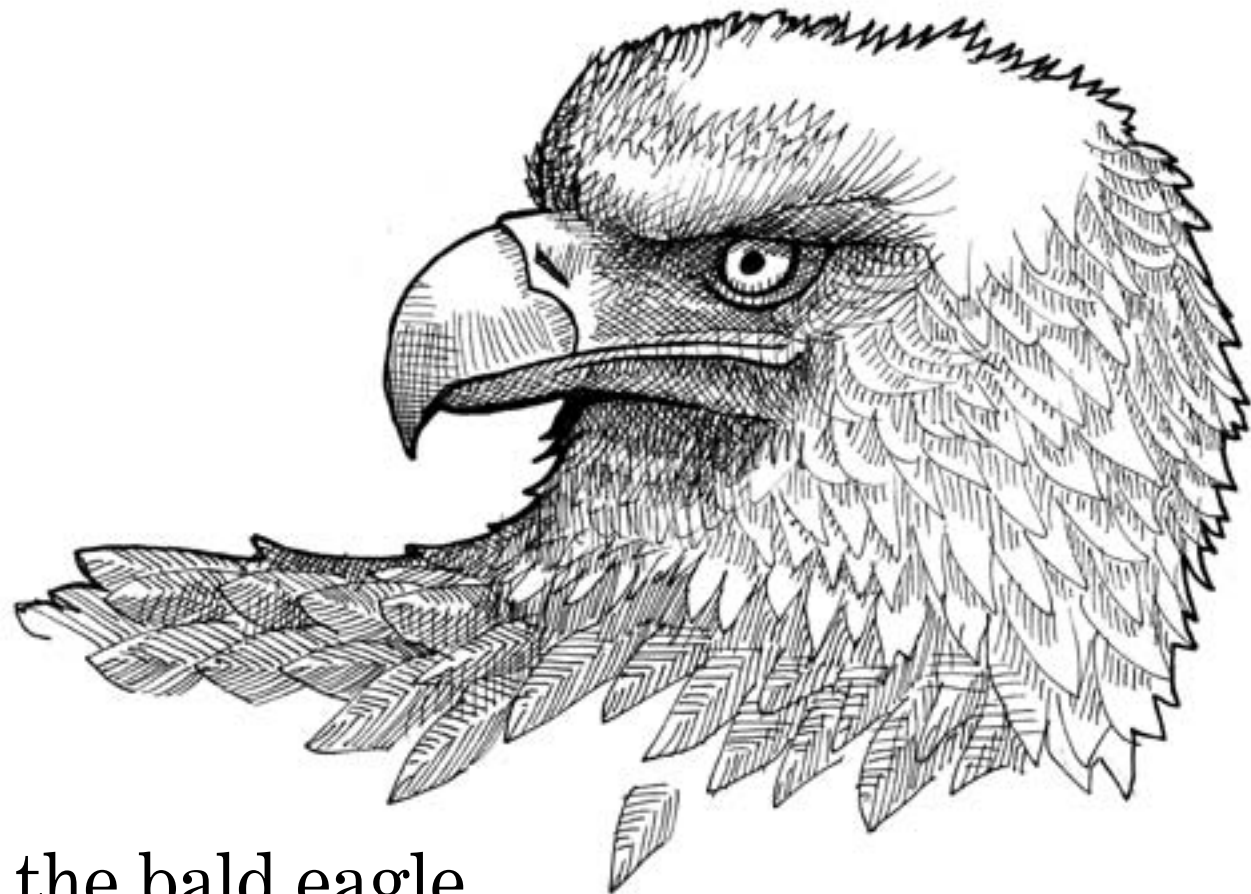
Top predators like those who eat fish, can end up with high levels of chemicals in their bodies; this can make them sick!

**Can you identify which animals eat fish?**

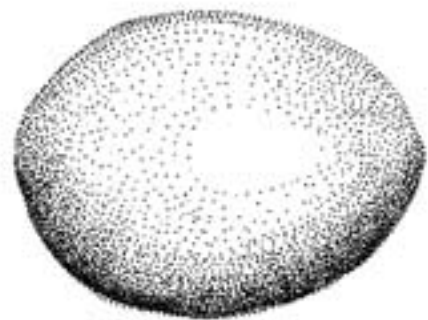


Answers: Heron, Bald Eagle, Human, Beaver

Removing one chemical, DDT, from the environment has contributed to the recovery of the nation's symbol and most beloved bird...



...the bald eagle.



Egg size: 6-12 cm



Nest size: up to 12 feet diameter

# Bald Eagles

**Common Name:** Bald eagle

**Class:** Aves

**Order:** Falconiformes

**Genus Species:** *Haliaeetus* (sea eagle) *leucocephalus* (white head)

**Size:** 3 - 3.5 ft. in height; 6.5 - 7.5 ft. wing span

**Weight:** males 8 - 9 pounds; females 10 - 14 pounds

**Description:** Adults have a distinctive white head and tail with a dark brownish black body and a bright yellow bill. Juveniles (younger bald eagles) lack the white head and tail. They are mostly chocolate brown with varying amounts of white over the body, tail, and under wings.

**Life Span:** up to 30 years in the wild and 48 years in zoos.

**Adulthood Age:** 4 - 5 years old (this is the age when bald eagles get their white heads).

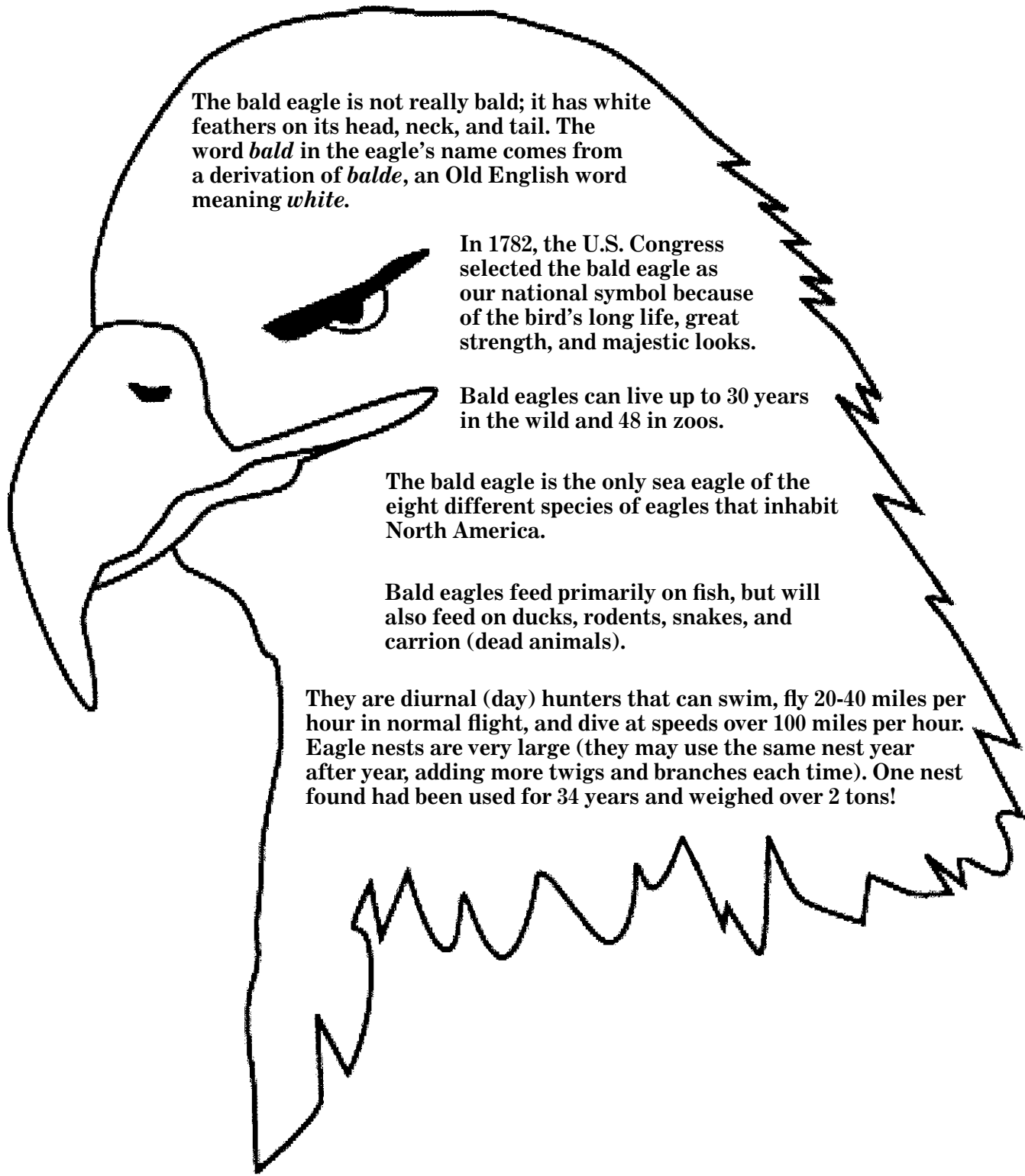
**Eggs Hatch in:** 31 - 45 days

**Habitat:** Bald eagles occur from Baja, California, and Florida north to Newfoundland and Alaska. Within this area, they live and nest near coastlines, rivers, lakes, wet prairies, and coastal pine lands. During migration, they may pass over mountains and plains.

**Diet:** Bald eagles are predators and scavengers. Their primary prey is fish, but they will sometimes take small mammals, waterfowl, wading birds, and dead animal matter, especially during the winter.



# FuN fAcTs



The bald eagle is not really bald; it has white feathers on its head, neck, and tail. The word *bald* in the eagle's name comes from a derivation of *balde*, an Old English word meaning *white*.

In 1782, the U.S. Congress selected the bald eagle as our national symbol because of the bird's long life, great strength, and majestic looks.

Bald eagles can live up to 30 years in the wild and 48 in zoos.

The bald eagle is the only sea eagle of the eight different species of eagles that inhabit North America.

Bald eagles feed primarily on fish, but will also feed on ducks, rodents, snakes, and carrion (dead animals).

They are diurnal (day) hunters that can swim, fly 20-40 miles per hour in normal flight, and dive at speeds over 100 miles per hour. Eagle nests are very large (they may use the same nest year after year, adding more twigs and branches each time). One nest found had been used for 34 years and weighed over 2 tons!

# Bald Eagle Basics Word Search

**Directions:** Find the terms listed below. Words can appear horizontally, vertically, diagonally, forwards or backwards.

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F | P | O | F | V | I | R | T | P | T | J | U | I | P | S | X | V | O | Q | X |
| K | S | R | L | A | C | I | R | E | M | A | H | T | R | O | N | M | I | H | D |
| O | Z | I | L | X | A | T | Q | Z | X | R | R | J | A | C | B | F | W | L | D |
| U | V | Y | U | B | E | L | G | A | E | D | L | A | B | R | I | D | B | Z | T |
| R | Q | S | S | H | T | A | L | O | N | S | B | I | Y | S | E | L | H | C | I |
| B | E | Y | R | I | E | S | L | S | T | X | W | E | H | V | Q | K | L | M | L |
| N | A | G | H | R | P | P | N | K | F | V | S | W | A | M | E | X | N | J | Z |
| G | V | L | M | T | C | R | A | P | T | O | R | O | R | K | I | U | Z | L | L |
| E | E | F | D | J | R | A | T | H | M | B | C | U | C | E | T | W | Q | V | G |
| Z | B | R | B | E | Y | B | C | N | M | R | H | I | U | C | T | I | A | O | C |
| J | S | E | L | G | A | E | A | E | S | D | N | A | H | S | I | F | N | T | H |
| G | Y | R | Z | I | W | E | L | N | V | V | V | E | O | K | A | U | S | X | V |

Fish and Sea Eagles  
Bald Eagle  
Talons  
Fish  
Balde

Raptor  
North America  
Beak  
DDT  
Eyries

*\*See page 39 for word definitions.*

# Status: Past and Present

**1782:** Bald eagle is adopted as the national symbol of the U.S. and there are approximately 100,000 nesting pairs living in what would become the lower 48 states.

**End of 1800s:** Eagle numbers drop dramatically due to competition for the same food and from habitat destruction by European settlers.

**1930s:** Bald eagle numbers continue to decline.

**1940s:** Bald Eagle Act passed to protect the nation’s symbol. Also, the “miracle pesticide” DDT started being used against mosquitoes without prior testing of its effects on animal populations.

**1940s, 1950s, 1960s:** DDT accumulation up the food chain caused the bald eagle, and other birds’ egg shells to become so thin and fragile that they were being crushed when parent birds tried to incubate them.

**1963:** Only 417 nesting pairs of bald eagles remained in the lower 48 states.

**1967:** Bald eagles are officially declared an endangered species in all areas of the lower 48 states under a law that preceded the Endangered Species Act of 1973.

**1972:** DDT use banned in the United States.

**1973:** The Endangered Species Act is signed into law by President Richard Nixon.

**1978:** Bald eagle is listed as a threatened species in Minnesota, Wisconsin, Michigan, Oregon, and Washington, and endangered in the remaining lower 48 states.

**1995:** Recovery of bald eagle populations, due mostly to the banning of DDT, led to an upgrade from “endangered” to “threatened” by the USFWS.

**1999:** The USFWS proposes delisting the bald eagle from the Endangered Species List, but it was determined that they could not be delisted at the time.

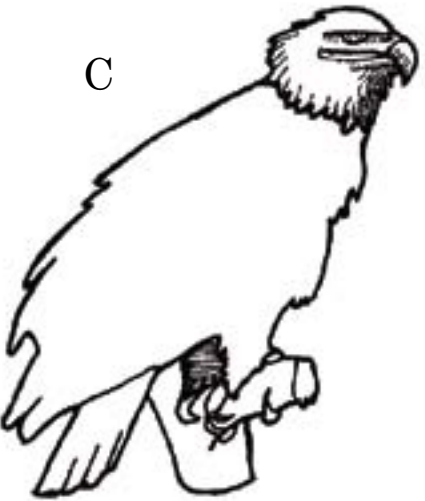
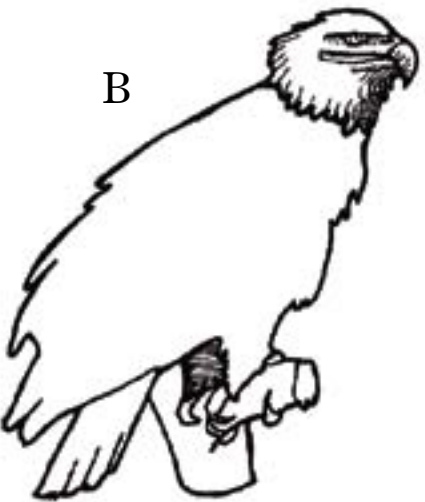
**2006/2007:** There are at least 7,000 nesting pairs of bald eagles in the contiguous U.S.

**June 28, 2007:** Official date by which the USFWS made a final determination on the eagle’s status for delisting from the Endangered Species List.

\*The single-most important regulation affecting bald eagle recovery may have been the banning of DDT for most uses in the United States.

\*DDT is still used today in Bolivia, the Philippines and other countries in Africa to control mosquito populations in order to prevent the spread of malaria.

# Which picture is different?



Your answer:

Answer: D



# THE STORY OF CALVIN AND CALISTA COTTONTAIL

CALVIN AND CALISTA COTTONTAIL OWN AND OPERATE A SMALL FARM IN UPSTATE NY. ONE DAY WHILE SITTING ON THE PORCH ENJOYING THE EVENING BREEZE, CALVIN REMARKED:

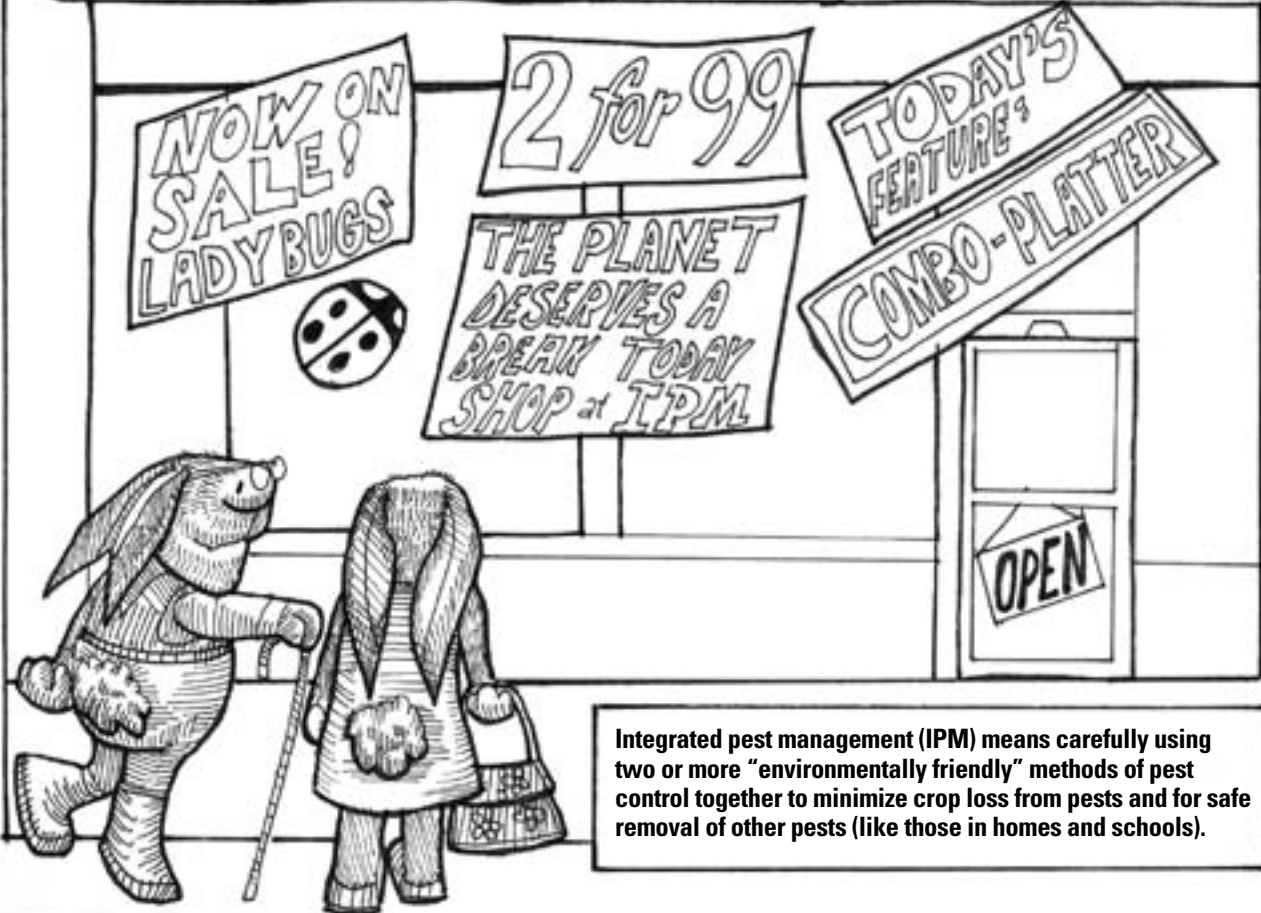
"YOU KNOW, CAL, I JUST LOOKED AT ALL THE FIELDS AND DON'T YA KNOW I THINK THAT WE HAVE SOME PEST PROBLEMS. I JUST DREAD EVERY SUMMER HAVING TO SPRAY THE CROPS TO KEEP THE BUGS AWAY."

WHAT IS UP 45 YEARS AFTER CARSON'S SILENT SPRING WAS PUBLISHED?

"I'M WORRIED ABOUT THAT PESKY PLANT, LOOSESTRIFE, TAKING OVER OUR MARSH. I HATE TO SPRAY THE MARSH TO KILL THE LOOSESTRIFE. LET'S GO OVER TO THE I.P.M. AND SEE WHAT THEY HAVE TO OFFER!"



## I P M STORE



Integrated pest management (IPM) means carefully using two or more "environmentally friendly" methods of pest control together to minimize crop loss from pests and for safe removal of other pests (like those in homes and schools).

CROP ROTATION

MECHANICAL WEED CONTROL

PROTECTIVE COTH

LIMITED TARGETED SPRAYING

GENERAL PREDATOR BEETLES

MINUTE PIRATE BUGS

EUROPEAN WEEVILS

ROW CROPPING

STICKY TRAPS

PERMONE TRAPS

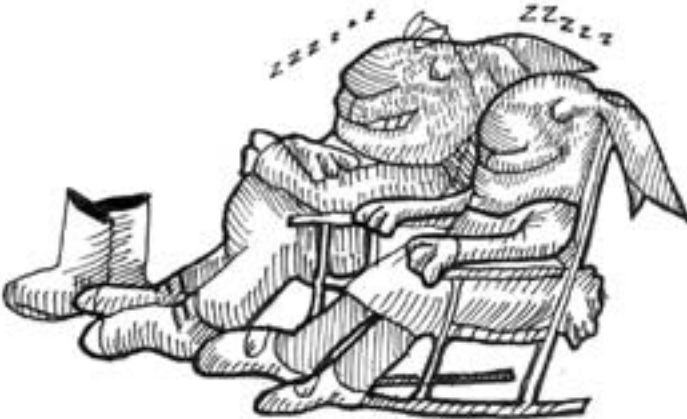
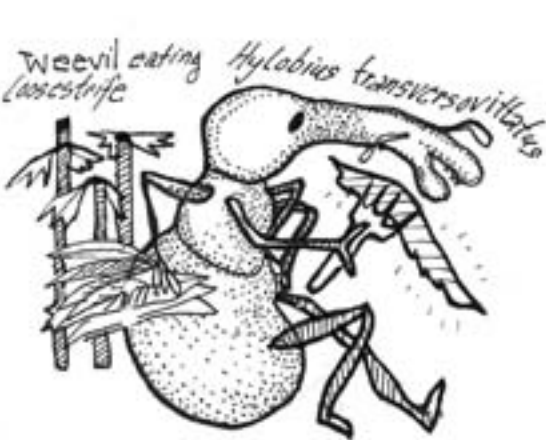
ALUMINUM FOR MULCH

SPECIALS:

"WHAT CAN I GET YA TODAY?"



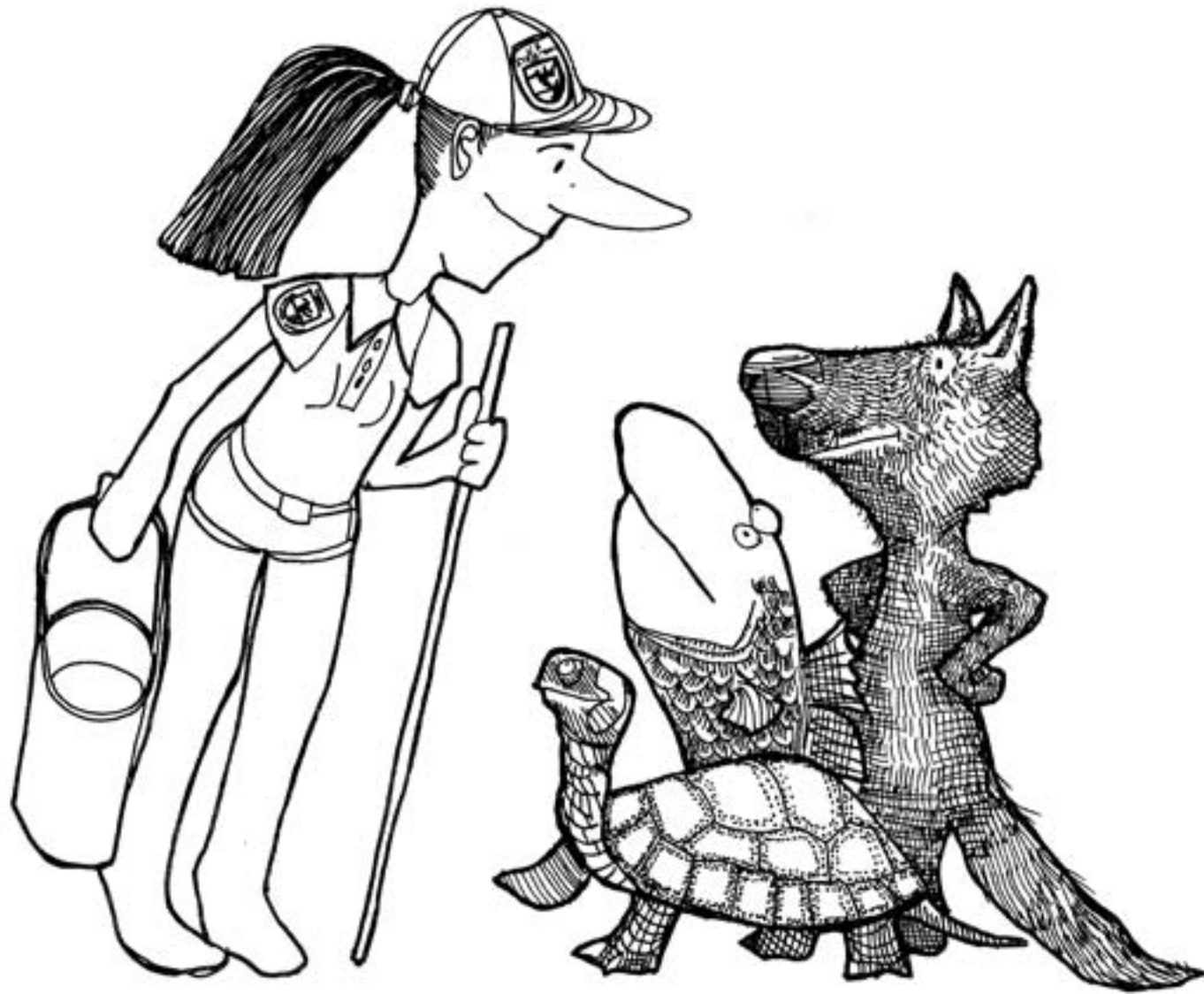
"COMBO PLATTER, PLEASE!"



For more information on integrated pest management, start by exploring these websites:  
[www.epa.gov/pesticides/factsheets/ipm.htm](http://www.epa.gov/pesticides/factsheets/ipm.htm); [www.nysipm.cornell.edu](http://www.nysipm.cornell.edu)  
[www.ipm.ucdavis.edu](http://www.ipm.ucdavis.edu); [www.ipm.iastate.edu](http://www.ipm.iastate.edu); <http://paipm.cas.psu.edu>



# U.S. Fish and Wildlife Service: who we are



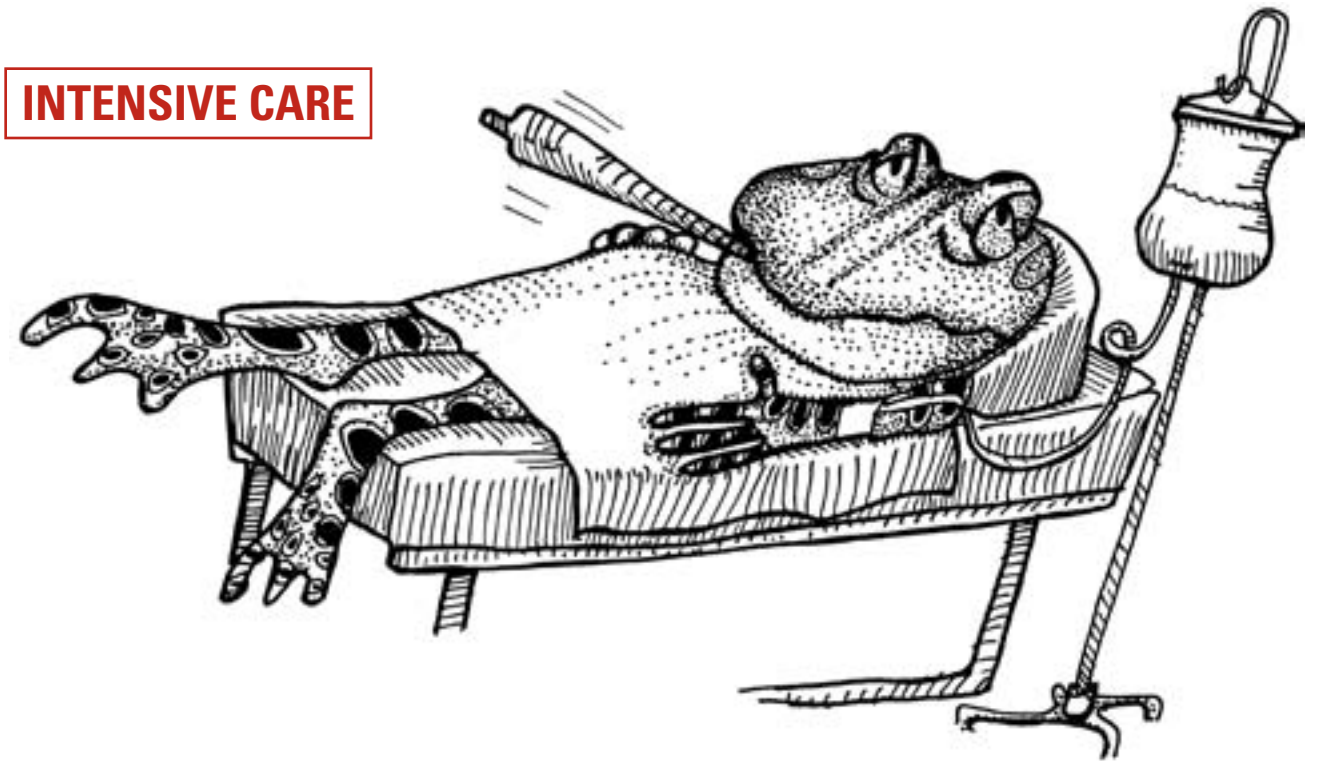
Providing over 125 years of service, the USFWS helps protect a healthy environment for people, fish, and wildlife, and helps Americans conserve and enjoy the outdoors and our living treasures. The USFWS major responsibilities are for migratory birds, endangered species, certain marine mammals, and freshwater and anadromous fish.

## What's Happening to FROGS

Frogs are a good indicator of habitat health because they are found in many places – ponds, ditches, even tire ruts. Frogs also may come in contact with different environmental contaminants throughout their amphibian lives (eggs are laid in water; spend part of their life in water, part on land).

Since 1995, researchers have been looking at frogs to see whether missing, extra, or unusual body parts are caused by changes in climate, predators, parasites, bacteria, fungi, or viruses...or pollution and contaminants such as pesticides, metals, and fertilizers.

### INTENSIVE CARE

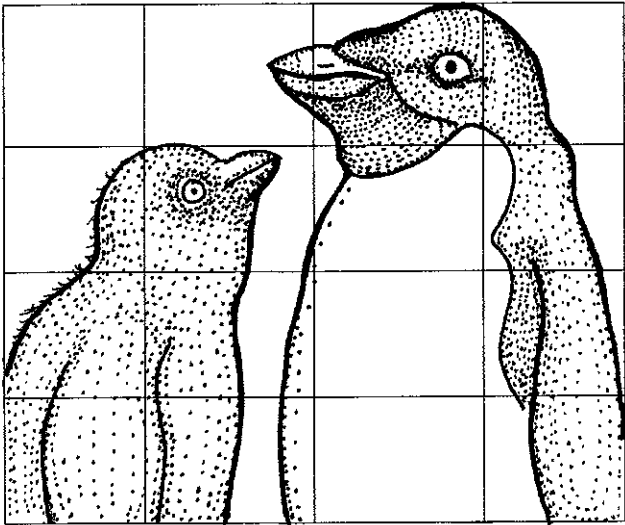


Since 2000, the USFWS has been studying frogs on 131 national wildlife refuges in 47 states. For more information, check out:

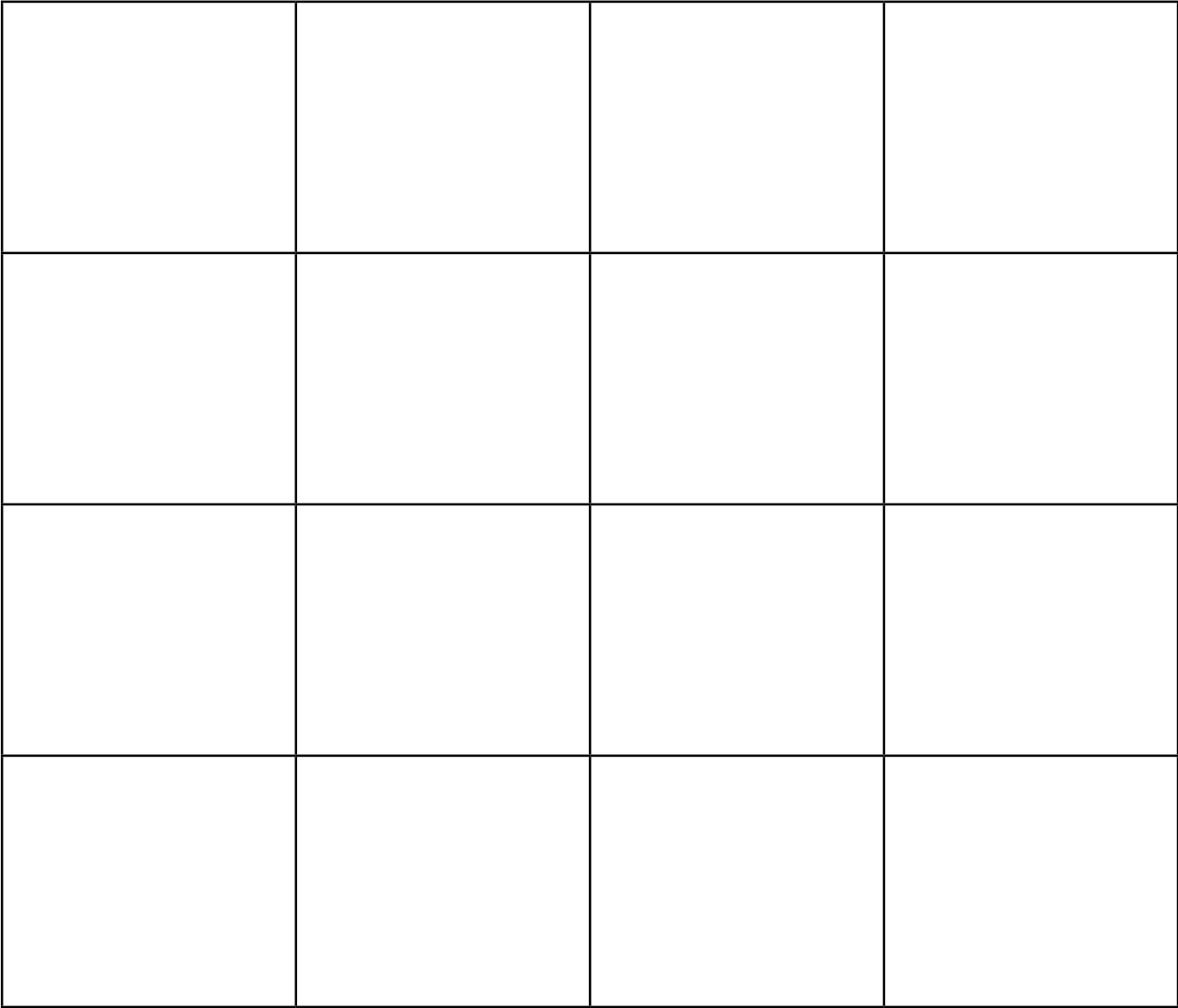
<http://www.fws.gov/contaminants/Issues/Amphibians.cfm>

YOU CAN DRAW!

Use the grid to draw the penguin.



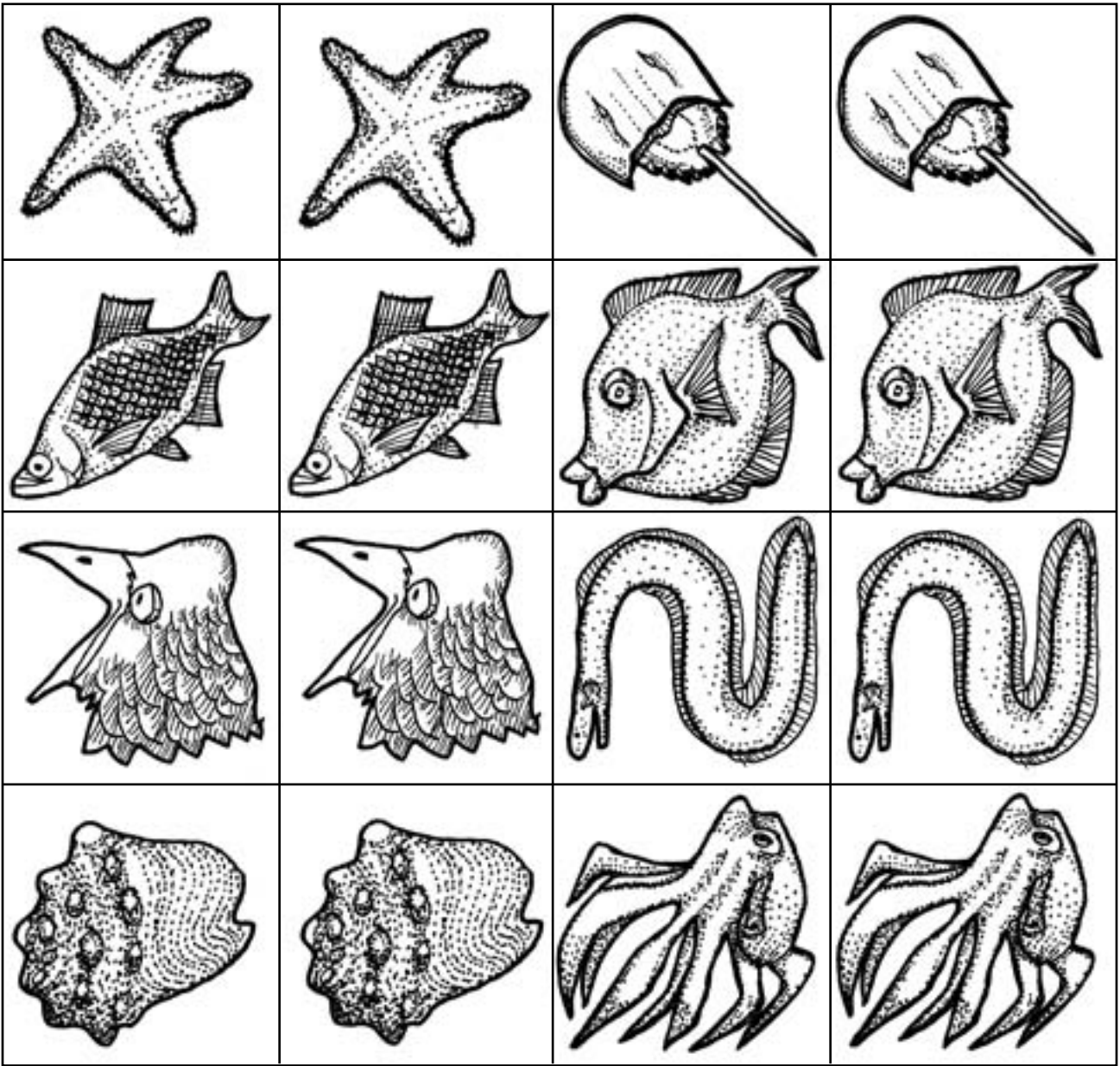
Even penguins living thousands of miles from the developed world are impacted by chemicals in the environment.



MEMORY GAME

Object of the Game:  
To find all the matching pairs of cards.

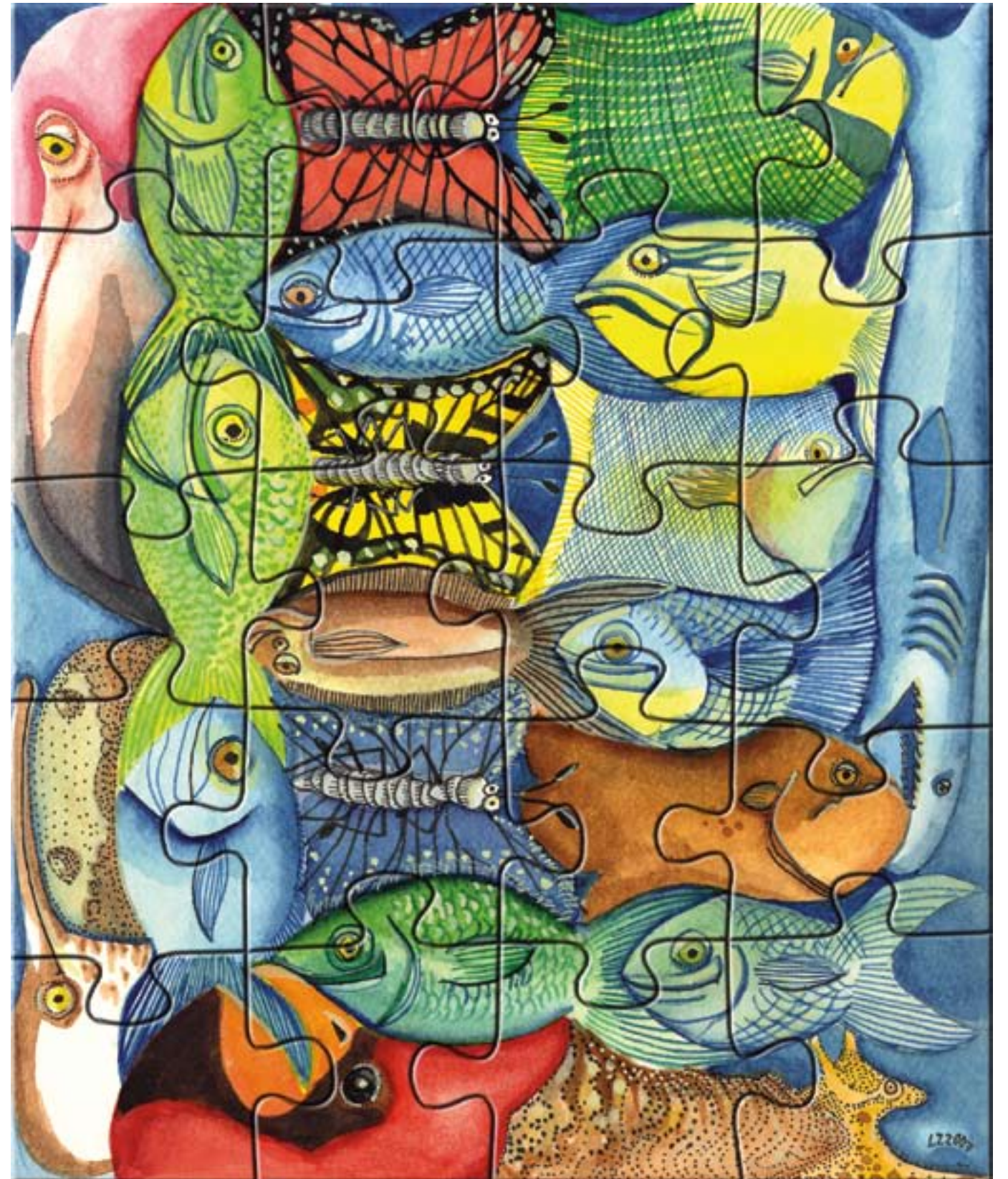
- How to Play:
- Glue this entire page to poster board to make it stronger.
  - Cut the cards out and lay all of the cards with their faces down.
  - Flip over two cards.
  - If both cards are the same, you keep the match and get another turn. If they are different, flip the cards back over and the next person takes a turn.
  - The game is over when all of the pairs are matched and all of the cards are gone.





# PUZZLE TIME

Glue this entire page to poster board to make it stronger and then cut out the shapes.







## Glossary

**Anadromous:** fish that migrate from salt water to freshwater to breed.

**Bald Eagle:** raptor; national emblem for the United States.

**Balde:** old English word meaning white.

**Beak:** yellow jaws on an eagle's head that are used to tear apart its prey.

**DDT (Dichlorodiphenyltrichloroethane):** a pesticide that caused the thinning of eagle egg shells.

**EPA (Environmental Protection Agency):** the federal agency responsible for the control of all forms of pollution and other kinds of environmental unfriendliness.

**Eyrie:** term used for an eagle's nest.

**Fish:** animals that live in the sea and make up 90% of an eagle's diet.

**Fish and Sea Eagles:** group of birds that includes the bald eagle.

**Mercury:** a highly toxic heavy metal.

**North America:** the continent where bald eagles are found.

**PCBs (Polychlorinated biphenyls):** a mixture of individual chemicals that are no longer produced in the United States, but are still found in the environment. They are known to cause cancer in animals.

**Pest:** any living organism (plant or animal) that occurs where it is not wanted or that causes damage to crops or humans or other animals.

**PPM (parts per million):** concentration of a substance in water or soil out of 1 million.

**Raptor:** birds of prey, such as eagles, hawks, owls, and falcons.

**Talons:** sharp claws used to catch and kill prey.

**USFWS:** U.S. Fish and Wildlife Service.

